WHAT IS CLAIMED IS:

1. A method of controlling fly height in a disc drive, comprising:

providing a fly height spacing between a read/write head on a slider and a media surface on a disc;

sensing with an electrode tip that is disposed on the slider and that faces a first portion of the media surface across a gap, the electrode tip conducting an electric current that passes through the gap, and the electrode tip providing a sensor electrical output representative of the length of the gap;

actuating the fly height spacing as a function of a received actuator electrical input; and

providing the actuator electrical input as a feedback function of the sensor electrical output to control the fly height spacing.

2. The method of Claim 1 wherein the electric current that passes through the gap is a quantum mechanical field emission current from the electrode tip.

3. The method of Claim 2 further comprising:

controlling the gap in a range of 5 to 15 nanometers.

4. The method of claim 1 further comprising:

providing the electrode tip with a tip surface comprising material selected from the group: p-doped diamond, diamond-like carbon (DLC), tungsten, molybdenum, lanthanum hexaboride, silica particles and beryllia particles.

5. The method of Claim 1 further comprising:

forming the electrode tip as part of a layer of metal in the read/write head.

6. The method of Claim 1 wherein the actuating is performed capacitively.

7. The method of Claim 6 wherein the capacitive actuation is performed by a first capacitive electrode surface that is disposed on the slider and that faces a second portion of the disc that forms a second capacitive electrode.

8. The method of Claim 7 further comprising:

spacing the first capacitive electrode surface apart from the second portion of the disc by a capacitor spacing that is greater than the gap length.

9. A disc drive, comprising:

a disc that includes a media surface;

a slider that includes a read/write head that is spaced apart from the media surface by a fly height spacing;

a sensor comprising an electrode tip disposed on the slider and facing a first portion of the media surface across a gap, the sensor being adapted to conduct an electric current through the gap and to provide a sensor electrical output representative of the length of the gap;

an actuator adjusting the fly height spacing as a function of a received actuator electrical input; and

a feedback circuit providing the actuator electrical input as a feedback function of the sensor electrical output to control the fly height spacing.

10. The disc drive of Claim 9 wherein the electrode tip has a tip surface adapted to provide quantum mechanical field emission current through the gap.

11. The disc drive of Claim 9 wherein the gap is in a range of 5 to 15 nanometers.

12. The disc drive of claim 9 wherein the tip has a tip surface comprising material selected from the group: p-doped diamond and diamond like carbon (DLC), tungsten, molybdenum, lanthanum hexaboride, silica particles and beryllia particles.

13. The disc drive of Claim 9 wherein the electrode tip is part of a layer of material in the read/write head.

14. The disc drive of Claim 9 wherein the actuator is a capacitive actuator.

15. The disc drive of Claim 14 wherein the capacitive actuator comprises a first capacitive electrode surface that is disposed on the slider and that faces a second portion of the media surface that forms a second capacitive electrode.

16. The disc drive of Claim 15 further comprising spacing the first capacitive electrode surface is spaced apart from the second capacitive electrode by a capacitor spacing that is greater than the gap spacing.

17. A disc drive, comprising:

a slider including a read/write head, and a disk including a media surface spaced apart from the read/write head by a fly height spacing and an actuator adjusting the fly height spacing as a function of a received actuator electrical input; and

feedback means for sensing the fly height spacing as a function of a quantum mechanical current across a gap between the slider and media surface, the feedback means generating the actuator electrical input to control the fly height spacing.